

Taking care of business



Astronaut Piers J. Sellers, STS-121 mission specialist, participates in the mission's third and final session of extravehicular activity.

STS-121 was highlighted by three productive, action-packed spacewalks. During the first, Mission Specialists Piers Sellers and Mike Fossum prepared the International Space Station's Mobile Transporter rail car for restoration and tested the combination of *Discovery's* robotic arm and Orbiter Boom Sensor System as a platform for orbiter repairs. In the second excursion, Sellers and Fossum restored the rail car to full operation

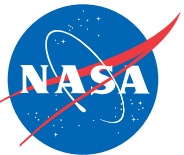
and delivered a spare pump module for the station's cooling system. And during the third, the two astronauts tested a reinforced carbon carbon repair material. Mission Specialists Lisa Nowak and Stephanie Wilson performed the robotics elements of all three spacewalks from within the spacecraft.

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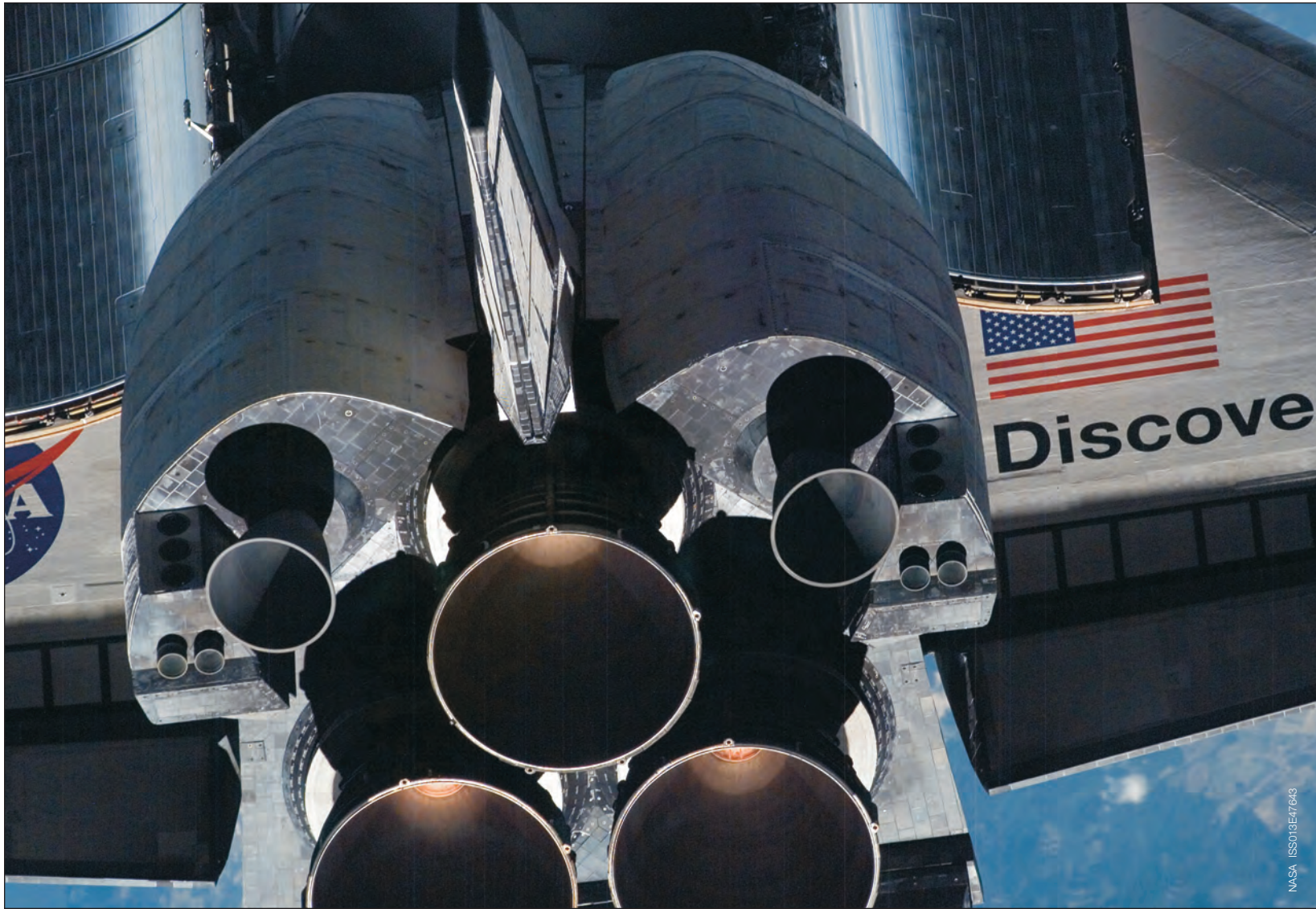
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'Most photographed' STS-121 returns

Data from more than 100 high-definition, digital, video and film cameras documenting the launch and climb to orbit helped assess whether the orbiter sustained any damage and whether that damage posed any risk to *Discovery's* return to Earth.

guest column

SPACE SHUTTLE PROGRAM MANAGER WAYNE HALE



Editor's note: Wayne Hale gave the following speech at a recent Space Flight Awareness event. The Roundup staff felt that it should be shared with the entire center.

These days, I think it's good to remember why we are doing what we do—why we explore space as an agency, why this nation decided we should go forward on this course. I've tried to run down the list of reasons, then I looked at each of them and tried to justify why we spend long, excruciating hours trying to do this risky business.

Is it because of the great spin-offs in technology and the advancements to our economy? Is it for national prestige? Those are all great, but I don't think they're the real reason. Is it because we're going to learn new things on the frontier? Perhaps they will invent the cure for cancer on the International Space Station, or perhaps we'll mine helium-3 from the lunar surface and discover how to turn it into unlimited fusion energy. Well, perhaps so—the history of exploration is fraught with discoveries that were totally unanticipated at the time that the exploration went forward. There will be new things that we will uncover that are totally unimaginable to us today, but I don't think that is the real reason.

Here is the real reason that I think spaceflight is important: It is because we live in a virtual world. We live in a world where our children are consumed by computer games and where we are enamored with the latest story out of Hollywood or on the video screen. We live virtual lives—it's not real, and when the game's over we can reset it and play it again and it didn't really count for anything.

But what we do is real. It's not made up, it's not computer generated and it's not an artist somewhere with a blue screen making it happen. It's real.

And we're doing something that is hard. We're doing this because it's a challenge and we need a challenge as a people. We would atrophy, we would stagnate and we would fall back into meaningless activities if we didn't have a challenge.

I've been reading a book about the Wright brothers and I came across this quotation. In 1901, Wilbur Wright talked about learning to ride a wild horse, saying that the best way was simply to get on and learn by experience. "It's very much the same in learning to ride a flying machine," Wright said. "If you are looking for perfect safety, you will do well to sit on a fence and watch the birds. But if you really wish to learn, you must mount a machine and become acquainted with its tricks by actual trial." I think that's sound advice.

Another appropriate quotation recently came across my desk. This one came from Shakespeare: "Our doubts are traitors and make us lose the good we oft might win by fearing to attempt."

Despite the doubts and despite the difficulties, we're going to continue on this path of exploration. And because of the hard work of everyone here, I am sure that we will be successful.

W. Wayne Hale, Jr.

Constellation of student programs turns visions into realities

by Debbie Nguyen

The Vision for Space Exploration is employing a stepping-stone approach to get America back to the moon, then on to Mars and beyond. For NASA to make this vision a reality, it needs a diverse, efficient, robust and technical workforce. As the agency transitions from lower-Earth orbit to beyond, who will be the faces of the new frontier?

To help answer that call, NASA has a constellation of student programs aimed at inspiring the next generation of explorers, feeding the pipeline and helping future leaders get their feet in the door of space exploration.

Several employees at Johnson Space Center have used these programs as pathfinders to their careers. The following is a snapshot of where these participants are now and how each program helped launch their dreams.

JONATHAN ABARY
Office of Communications and Public Affairs
Office Education (OE) Program, Education and Training Cooperative (ETC) Program, and NASA's Cooperative Education (Co-op) Program

Even though Jonathan Abary is only a sophomore at the University of Houston, he's already spent three years at JSC. He first got his foot in the door when his co-op teacher encouraged him to pursue the OE Program.

"The OE Program is a great way to allow high-school students the once-in-a-lifetime chance to become familiarized not only in a professional environment, but also with NASA as an agency," said Abary, who then transitioned into the ETC Program.

During his time as an ETC student, working part-time and going to school full-time, Abary supported the Astronaut Selection and Awards Office, coordinating center and agencywide awards ceremonies. There, he was introduced to NASA's Co-op Program.

Abary, a business major, wrapped up his first co-op tour in the spring as a contract specialist in the International Space Station Procurement Office. He continues through the pipeline to the Office of Communications and Public Affairs this summer, further broadening his experience.

GENEVIEVE A. JOHNSON
Intelligent Systems Branch
Minority University Research and Education Program (MUREP)

For the past 12 years, Genevieve Johnson has been developing advanced automation and intelligent software systems as a computer engineer in the Automation, Robotics and Simulation Division. Her father, also an engineer, was a major influence early



Jonathan Abary

on, but her journey to JSC began right after graduating from Houston's Booker T. Washington High School for Engineering Professions. There, she was selected for the Women in Science and Engineering (WISE) Scholars Program provided by NASA, in partnership with Spelman College in Atlanta.

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